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Foveal Atrophy Following Traumatic Central Serous Chorioretinopathy- A Rare Case Report

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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Case Study

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ABSTRACT

Purpose: To present a rare case of foveal atrophy following traumatic central serous chorioretinopathy.
Methods: The case was evaluated through a comprehensive ophthalmic assessment including visual acuity, fundus examination and OCT scans.
Results: A 40-year-old female experienced severe blunt trauma to her right eye and presented to the emergency unit of a specialized ophthalmic hospital with significantly decreased vision (OD counting fingers at 1 meter, OS 6/6). Fundus examination reveals an obvious macular neurosensory retinal detachment with subretinal fluid in the right eye as confirmed by OCT. After 1 month, another OCT was performed, demonstrating the complete resolution of subretinal fluid, but with foveal atrophy and visual acuity remain counting fingers for a 1-meter distance in her affected eye.
Conclusion: Trauma as a cause for CSR is highly unusual or rare. However, foveal atrophy as a result of traumatic CSR in a one-month follow-up was not previously reported in the literature.

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Keywords: Central serous chorioretinopathy; trauma; foveal atrophy; traumatic CSR.

1. INTRODUCTION

Central Serous Chorioretinopathy (CSR), is a retinal disorder characterized by localized serous detachment of the macula with or without focal serous pigment epithelial detachment (PED). It is mostly seen in young men aged 20–45 years, along with established causes including idiopathic, stress (psychological stress), systemic steroid use, sleep disturbances and pregnancy [1,2,3]. The pathophysiology of CSR is not fully understood but is thought to involve choriocapillaris hyperpermeability and/or retinal pigment epithelium (RPE) dysfunction resulting in sub-retinal fluid accumulation. The natural course of CSR is often self-limiting, spontaneous resolution and complete fluid reabsorption often occurs. Fundus examination, optical coherence tomography (OCT), Fundus autofluorescence (FAF) and fluorescein angiography or Indocyanine green angiography, are commonly used to diagnose CSR [4]. The visual prognosis is good in 90–95% of cases and visual acuity returns to normal within a few months once the fluid has resolved. The visual distortion often diminishes as the eye heals, but in some patients, certain visual abnormalities may persist even after the fluid has dissipated [5].

It is quite uncommon for blunt trauma to be linked as a cause to CSR [6,7,8].

2. CASE REPORT

2.1 Presentation and Ophthalmic Examination

A 40-year-old female experienced severe blunt trauma to her right eye and presented after less than 24 hours to the emergency unit of a specialized ophthalmic hospital with severe decreased vision, counting fingers at one meter in the right eye, while it was 6/6 in her left eye. She states her previous visual acuity was equal in both eyes, and she had no prior eye complaints.

On the second day, she was referred to the retina clinic. Anterior segment examination revealed severe ecchymosis and mild to moderate lid swelling in the right eye. She had mild anterior uveitis observed by high magnification slit lamp biomicroscopy (1+ cells) with no hyphema. No relative afferent pupillary defect was detected. Intra-ocular pressure (IOP) measured by non-contact tonometry was 16 mmHg and 19 mmHg in right and left eyes respectively. Fundus examination disclosed obvious macular neurosensory retinal detachment with subretinal fluid in the right eye. The optic disc was normal, with no pit, no evidence of vitritis, breaks, choroidal rupture or commotio retinae.

2.2 Past History

Past ophthalmic and medical histories were unremarkable, with no medication, alcohol, or smoking history.

2.3 Diagnostic Procedures

Optical Coherence Tomography (OCT) revealed serous neurosensory detachment of macula (Fig. 1). A B-scan showed elevated retina temporal to optic disc (Fig. 2). Fundus Fluorescein Angiography (FFA) exhibited smokestack leakage.

2.4 Treatment and Follow-up

She was prescribed Ketorolac eye drops (non-steroidal anti-inflammatory drug) and followed up for one month. A subsequent OCT revealed total resolution of subretinal fluid, but unfortunately, foveal atrophy developed, and visual acuity remained at counting fingers for one meter (Fig. 3).

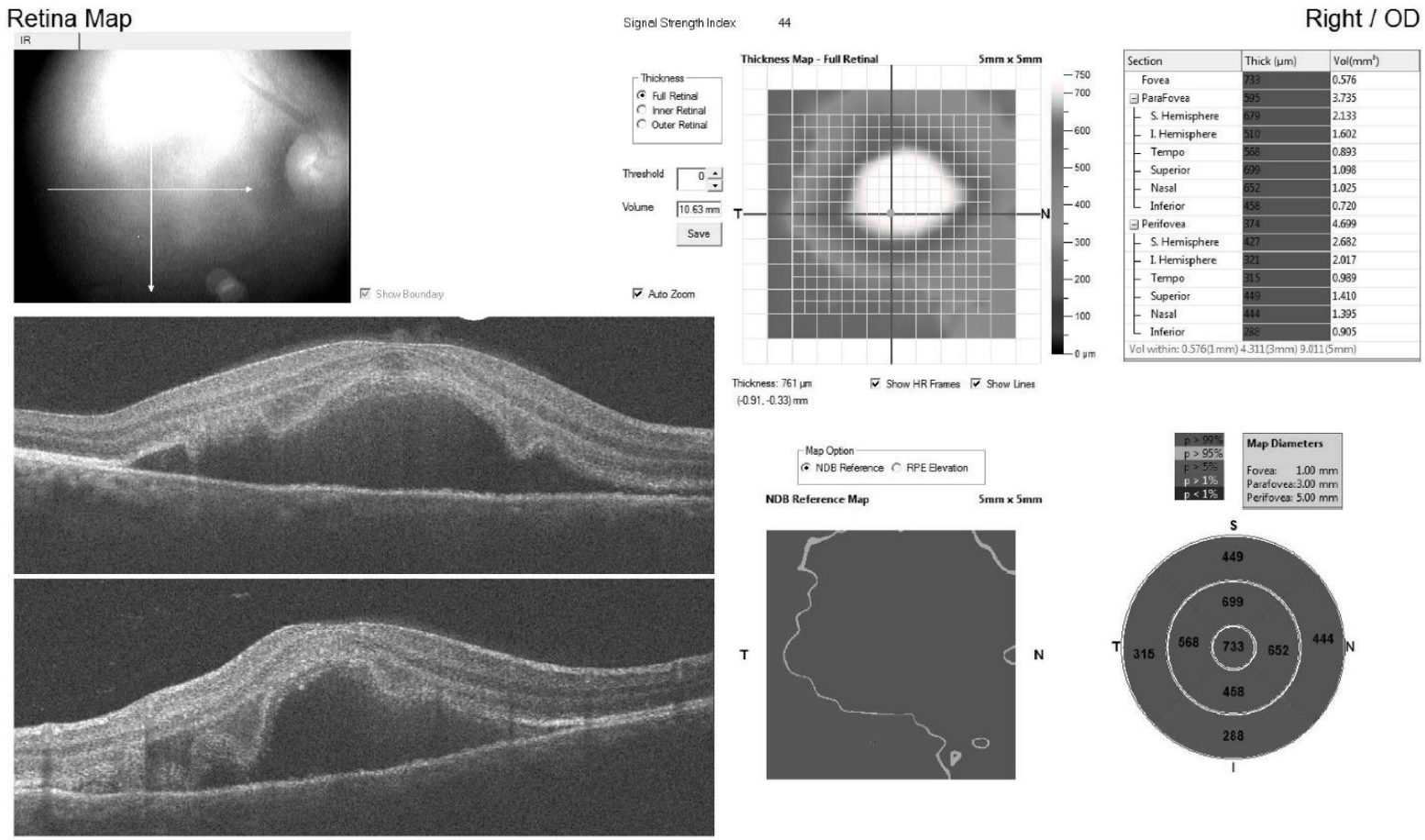

Fig. 1. Optical Coherence Tomography (OCT) shows significant macula subretinal fluid

OCT image capturing after blunt trauma to the right eye (OD), demonstrating a notable accumulation of subretinal fluid. The high-resolution cross-sectional view of OCT.

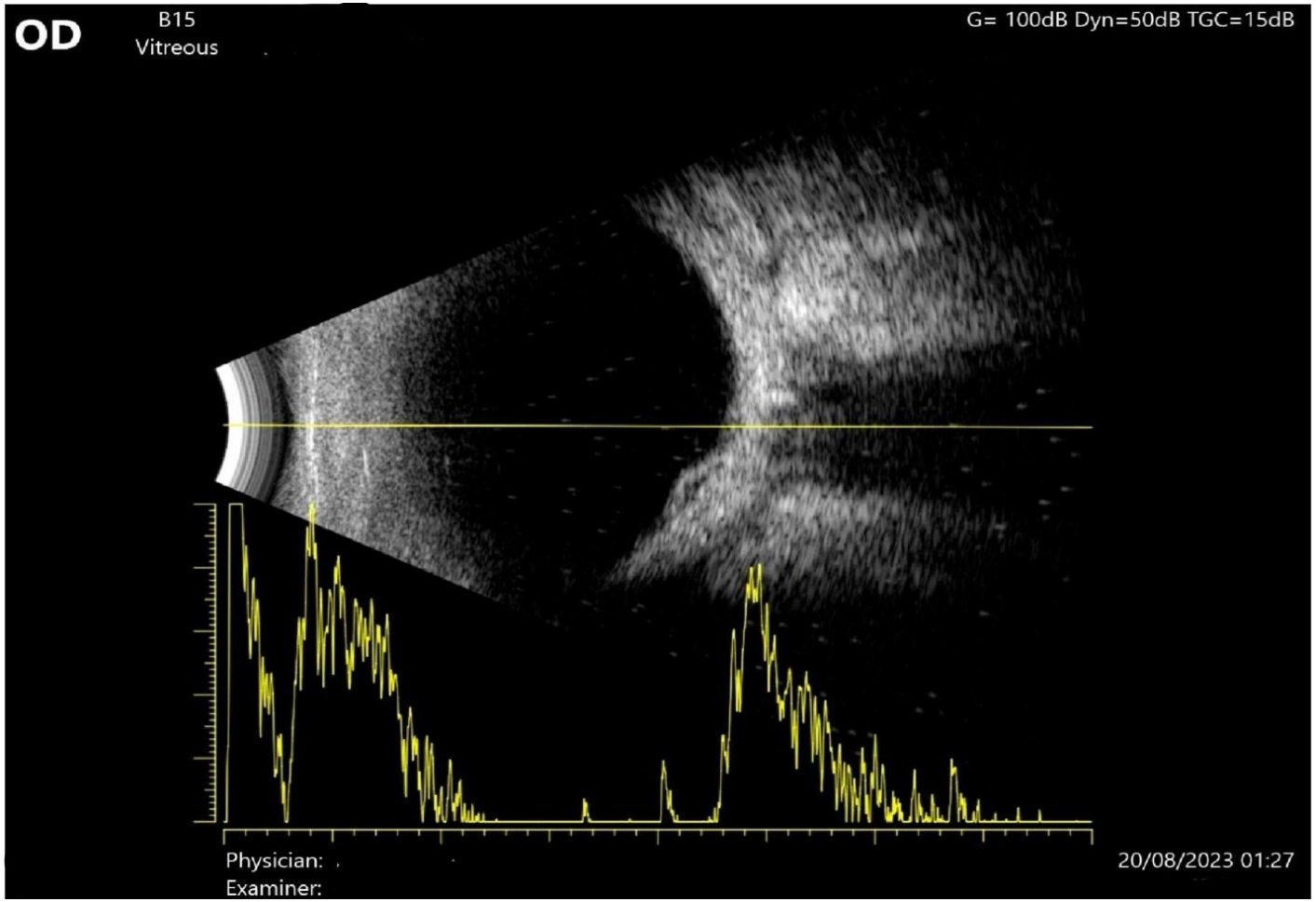

Fig. 2. B-Scan revealing elevated retina in the macula

B-scan image illustrating a distinct elevation of the retina in the macular region post blunt trauma to right eye.

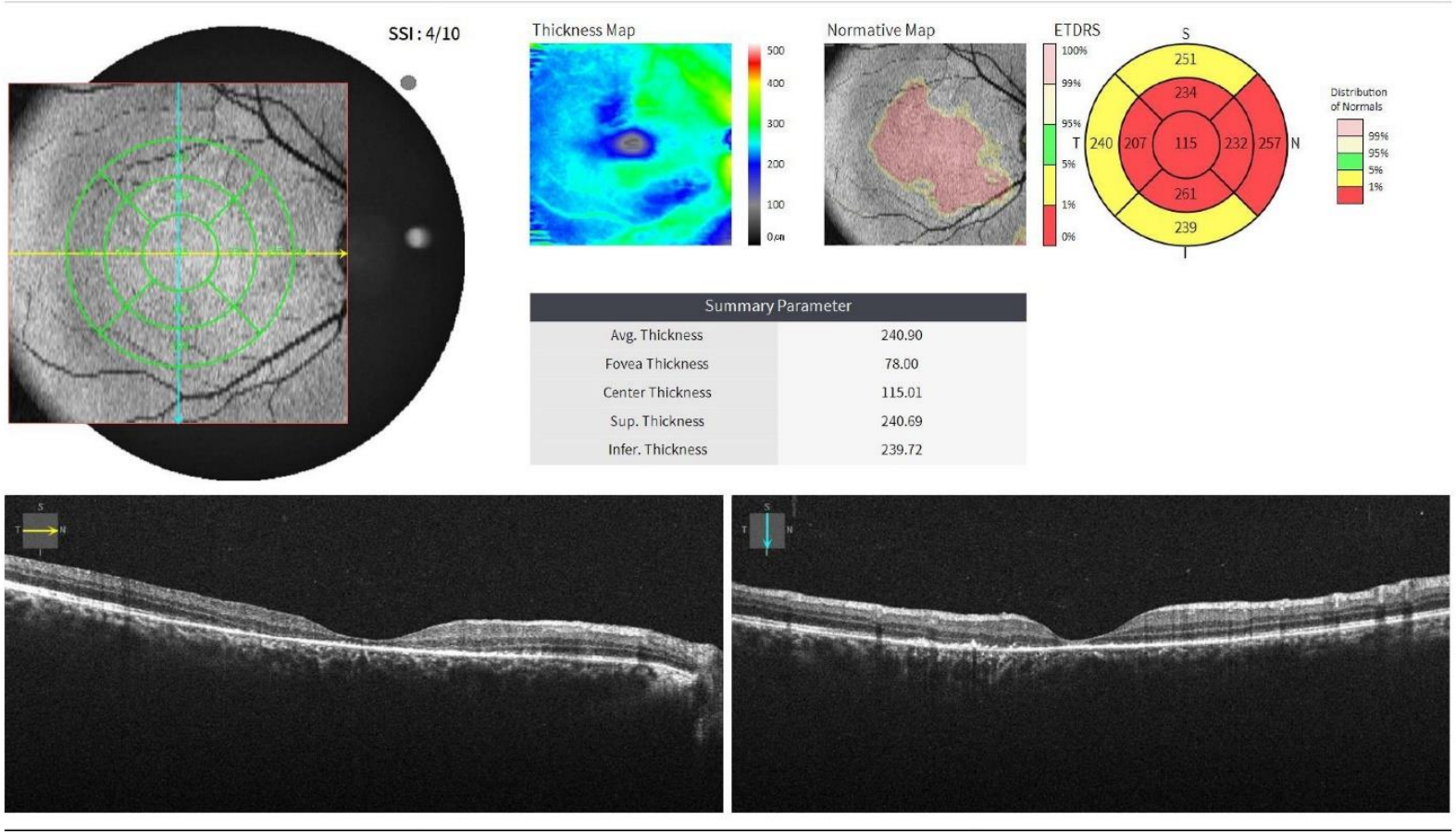

Fig. 3. Optical Coherence Tomography revealing complete resolution of subretinal fluid with foveal atrophy one month post blunt trauma

OCT scan captured one month after blunt trauma, revealing the complete resolution of subretinal fluid. The image further illustrates the development of foveal atrophy, disruptions in the ellipsoid zone and thinning of the foveal retinal layers, Cross-section view of OCT.

3. DISCUSSION

Trauma as a cause for CSR is highly unusual or rare. However, foveal atrophy resulting from traumatic CSR in a one-month follow-up was not previously reported in the literature. The atrophic changes manifested as disruptions in the ellipsoid zone and thinning of the foveal retinal layers, contributing to compromised visual acuity. The pathogenesis of foveal atrophy can be multifactorial and may vary depending on the underlying condition or disease. Foveal atrophy can be observed in a variety of macular vascular, hereditary, inflammatory, toxic, and traumatic retinal disorders [9].

This case demonstrates the rapid development of foveal atrophy as a course of traumatic CSR, in contrast to the previous few case reports (Jackson et al, L. Steeples et al and Ponce et al) on traumatic CSR that showed complete resolution of subretinal fluid and a return to good visual acuity [10,11,12]. Our findings align with prior studies indicating an association between CSR and foveal atrophy [13]. While traumatic cases are less explored, existing literature underscores the importance of understanding the long-term consequences of CSR, especially when caused by trauma.

According to a review article by Liew et al. psychosocial stress, endogenous Cushing's syndrome, systemic steroid treatment, and pregnancy are the key risks factors for CSR. Collagen vascular disease and sleep apnea among less common association to CSR [1], we suggest that trauma should now be regarded as an uncommon causative factor.

4. CONCLUSION

Trauma, as demonstrated in this case, is an uncommon but potential etiology that might cause CSR that might have significant sequalae, such as foveal atrophy. Recognizing trauma as a potential cause for CSR and understanding its capacity to result in significant sequalae, such as foveal atrophy, adds a valuable dimension to the existing literature and necessitates further exploration into the mechanisms and long-term implications of traumatic-induced CSR.

CONSENT

Written informed consent was obtained from the patient.

ETHICS APPROVAL

This case report approved by Ethics Committee in Ibn Al Haitham Teaching Eye Hospital, Baghdad, Iraq and conducted according to the guidelines of the Declaration of Helsinki.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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